

○Two noteworthy species of *Cladonia* found on Mt. Hayachine in northeastern Japan (Kozo YOSHIDA & Heinai SHIBUICHI) 吉田考造・四分一平内: 早池峰山産のハナゴケ属の2種の新分布

Although *Cladonia* is one of the well studied lichen genera in Japan, distribution of some rare species remains poorly understood. In addition, range extension of some boreal or tropical species unrecorded from Japan is also expected. In 1987, we collected two noteworthy species of the genus at the alpine zone of Mt. Hayachine in northern Japan. They are *C. cariosa*, a rare species in Japan, and *C. coccifera*, a boreal species not recorded before from Japan.

1) *Cladonia cariosa* (Ach.) Spreng.

The occurrence of the present species in Japan was first reported by Nylander (*Lichenes Japoniae*. 122pp. Paris. 1890). Later, Asahina reported this species from Saghalien (*Journ. Jap. Bot.* 16: 517-522, 1940) and also from Hokkaido (*Lichens of Japan I. Genus Cladonia*, 255 pp. Tokyo, 1969). According to Culberson (*Bryologist* 72: 377-386, 1969), this species belongs to the *Cladonia cariosa* group and is distinguished from *C. symphycarpa* (Ach.) Fr., a morphologically most closely resembling species, by the lack of norstictic acid, though these two species produce atranorin. Specimens collected on Mt. Hayachine have consistent primary squamules of small size, longitudinally fissured podetia with chondroid ribs inside, and brown to dark brown hemiglobose apothecia, all of which are characteristic of the *C. cariosa* group. In these specimens, atranorin and an unidentified substance were demonstrated by the crystal method, but norstictic acid was not. The unidentified substance was reported in Japanese and European specimens of *C. cariosa* and was considered to be a fatty acid related to rangiformic acid by Asahina (loc. cit.), even though it was not mentioned by Culberson (loc. cit.). Thus the specimens can be identified with *C. cariosa*. Another specimen collected in northern Hokkaido is also identified with *C. cariosa*. Thus, two new localities for the species, Hamatonbetsu in Hokkaido and Mt. Hayachine in Honshu, are added, the latter being the southernmost locality in Japan so far as we know at present.

Specimens examined. Hokkaido, Prov. Kitami: Hamatonbetsu, S. Kurokawa 70851 (TNS). Honshu, Prov. Rikuchu (Iwate Pref.): Mt. Hayachine, elevation about 1900 m, S. Kurokawa 59352 (TNS), H. Shibuichi 8251 (TNS) and K. Yoshida 8176 & 8271 (Herb. of K. Yoshida).

2) *Cladonia coccifera* (L.) Willd.

Morphologically this species closely resembles *C. pleurota* (Flörke) Schaer., which is very common in montane to alpine zones of Japan, and has been considered to be separated from the latter species by the production of barbatic acid rather than zeorin along with usnic acid. It is widely distributed in boreal zones in the Northern Hemisphere, being known from Europe, North America and Siberia. However, it has never been reported from Japan.

Specimens collected on Mt. Hayachine have distinct cups with yellowish-green primary thalli as in *C. pleurota* and lack soredia on podetia. In these specimens, usnic and barbatic acids were demonstrated with the crystal as well as with the thin layer chromatography (TLC) tests. Although an unidentified yellow pigment was not demonstrated with TLC, they are identified with *C. coccifera* by the absence of soredia and the production of barbatic acid. The present species may be confused with other esorediate taxa of the series Cocciferae such as *C. pleurota* var. *esorediosa* Asah. (= *C. pseudodigitata* Gyeln.), *C. granulans* Vain. and *C. metacorallifera* Asah. However, *C. pleurota* var. *esorediosa* produces zeorin and *C. granulans* and *C. metacorallifera* produce squamatic acid. This is the first recorded of the species in Japan.

Specimens examined. Honshu, Iwate Pref., Mt. Hayachine, elevation about 1900 m, K. Yoshida 8192 (Herb. of K. Yoshida) and H. Shibuichi 8312 (TNS)

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1987年の夏、東北地方岩手県内の早池峰山（標高 1913 m）における地衣フロラ調査を行ない、分布上興味深いハナゴケ属の 2 種を得たので報告する。その何れも山頂付近の高山帯風衝地に生育していたものである。1) カリエスゴケ 本種の日本における分布として、1890年に Nylander によって陸奥・弘前産が報告され、その後北海道からも報告されている（朝比奈 1969）。本種は分類が困難な *C. cariosa* グループの一員として知られているが、その成分はアトラノリンと未同定成分であることから、近縁のヒメミゾハナゴケ *C. brevis* (Sandst.) Sandst. (ブソローム酸を含む) やターバンゴケ *C. capitata* (Michx.) Spreng. (フマルルプロトセトラールを含む) などと区別される。なお、早池峰山は本種の日本における最も南の産地である。2) *Cladonia coccifera* (L.) Willd. 早池峰山から得られた標本はヨーロッパや北米産のものと比較すると地衣体の黄色味が薄い。しかし、子柄には粉芽が無く、ウスニン酸とバルバチン酸を含むことから、ゼオリンをもつ近縁のアカミゴケと区別して、本種と同定した。日本新産である。

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